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UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT LABORATORY

Project h-1-22 (1) Date January 6, 1947 Author RMO

TITLE

FOREST INSECT SURVEY - YOSEMITE NATIONAL PARK

SEASON OF 1946

By

G. R. Struble,
Entomologist

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1946

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley 4, California

U. S. GOVERNMENT PRINTING OFFICE 16—47272-1

SUBJECT—

INDEX NO.—

U. S. Department of Agriculture
Bureau of Entomology and Plant Quarantine
Forest Insect Investigations

FOREST INSECT SURVEY - YOSEMITE NATIONAL PARK

SEASON OF 1946

Approved by:

F. P. Keen

F. P. Keen,
Entomologist, in Charge

Submitted by:

Geo. R. Struble

G. R. Struble,
Entomologist

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley 4, California

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INTRODUCTION

Continuous protection of the recreational forest areas of Yosemite National Park against destructive forest insects is necessary to preserve their natural beauty and character. The mixed conifer stands extending from Mariposa Grove to Hetch-Hetchy are highly susceptible to bark beetle attacks, with considerable periodic killing; insect damage also is important in the fir, the lodgepole pine, and Jeffrey pine stands at higher elevations. Control measures to suppress the amount of insect activity and killing in localities where they are aggressive must be continued from year to year.

The basic information on the character, intensity, and distribution of destructive insects, and on the need for control work is determined as a result of the annual forest insect survey which is made usually during September and October by the Berkeley Laboratory, Bureau of Entomology and Plant Quarantine. The principal timbered areas are covered at the same time. Current insect-caused losses are recorded within measured samples varying in size, but attempting to sample about one percent of the stand within given timber types.

No general outbreaks of epidemic character have occurred within recent years. The worst epidemic on record in the pine type occurred from 1931 to 1935, and was suppressed after several successive seasons of intensive control work. During the advent of C.C.C. camps from 1933 to 1940, insect damage was kept down to a minimum by continuous maintenance control work. For the past four years active local bark beetle outbreaks have been suppressed by regular maintenance control crews. The most recent outbreak at Big Meadows in 1943 resulted from population increases of bark beetles in fire injured timber of the 1941 Powerline Burn. Active infestations, increasing particularly in the Valley floor in 1945, were largely eliminated during the 1945-1946 winter season by felling, peeling, and burning the infested trees. Current conditions within the park with infestations at a low endemic level attest to the efficacy and importance of continuous maintenance control work.

The survey of Yosemite National Park this year was completed between October 4 and 6 by G. R. Struble of the Berkeley Laboratory. All of the principal timbered areas which are traversed by roads were sampled by means of roadside plots. Representative samples were taken in Mariposa Grove, Wawona, Alder Creek, Chinquapin, Yosemite Valley, Big Meadows, Carlon, Hetch-Hetchy, Tuolumne Meadows, Yosemite Creek, and Bridleveil Meadow.

SURVEY DATA OBTAINED

Insects Involved

In the pine type the western pine beetle, Dendroctonus brevicomis, attacking ponderosa pine and the mountain pine beetle, D. monticolae, attacking sugar pine were primarily responsible for the killing this year. The insects in both species of pine were aided by the top-killing pine engraver beetle, Ips confusus, and flathead borers, Melanophila californica and M. gentilis. Infestations were confined to single trees broadly interspersed through the forest type, with no tendency toward grouping.

In fir, the fir engraver beetle, Scolytus ventralis, and Sierra fir borer, Tetropium abietis, were principally responsible for topkilling, limb killing, and death of entire trees. Death to white fir, particularly within the mixed conifer zone, was unusually heavy this year.

The limited amount of infestations in lodgepole pine was caused primarily by the mountain pine beetle; no active infestations of the lodgepole pine needle miner, Recurvaria milleri, were observed. The mountain pine beetle activity was confined to broadly scattered local small groups of trees with no tendency toward an increase over 1945.

Infestations in Jeffrey pine caused principally by the Jeffrey pine beetle, D. jeffreyi, were confined to single, widely-scattered trees, principally in the vicinity of Glacier Point, Illillouette Basin, and Little Yosemite.

Character and amount of current losses

The situation in pine generally, in all of the timber types within the park this year is endemic. It is somewhat less than that occurring in 1945. Conditions in the Valley floor, Big Meadows and Crane Flat areas are distinctly improved. A slight increase in kill along the Wawona road south of Chinquapin and in Mariposa Grove was partially influenced this year by several lightning-struck trees which were attacked during the summer.

In lodgepole pine 1946 infestations were sustained at or slightly below the 1945 level, and remained highly localized in the vicinity of the Bridleveil camp ground. At Tuolumne Meadows there was no recurrence of the infestations evident in 1945, particularly near the camp ground area.

The situation by units, based on measured sampling within these units is shown in the table which follows:

Estimated Pine Losses in Reporting Areas

Reporting Area	Unit	Acres	Infested Acreage	Trees	Volume MBM
A	2 Wawona	12,360	4,000	60	150
	3 Alder Creek	14,520	4,000	70	125
		26,880	8,000	130	275
B	4 Chinquapin	11,300	6,000	75	240
	5 Big Meadows	21,200	10,000	150	100
	6 Yosemite Valley	9,600	9,000	30	15
	7 Bridleveil	11,500	3,000	120	36
	10 El Capitan	25,500	6,000	50	15
		79,100	34,000	395	406
C	13 Carlon	26,880	6,000	40	90
	14 White Wolf	25,600	4,000	100	20
	15 Hetch-Hetchy	85,000	10,000	125	100
	18 Tuolumne	65,000	6,000	100	12
		203,080	26,000	365	222

Results of 1945-46 Control Work

Insect control work during the period from January 1, 1945 to May 13, 1946, most of which was undertaken during the fall, 1945 and winter and spring, 1946, resulted inthe treatment by felling and burning of 254 trees with a volume of 816,510 board feet.* Of the pine trees treated, 210 were ponderosa pine with a volume of 442,980 feet b.m. and 44 were sugar pine with a volume of 373,430 feet b.m.

An inspection of this project was made by J.E. Patterson, of the Berkeley Laboratory early in May, 1946. Patterson stated in a memorandum dated May 13, 1946: "The areas covered included: Yosemite Valley, Big Meadows, Crane Flat, Merced Grove, Wawona Basin, Alder Creek Basin, Wawoma Road Screen and Grouse Creek Basin. These areas were worked in practically the order named. The only area that was not worked is Mariposa Grove. Between 6 and 10 infested trees were left untreated in this area.

"The peel-burn method of control was used. Examination of several treated trees in four separate areas showed that the work had been highly efficient. All infested bark had been removed from these trees and entirely burned."

The results of this maintenance control work as judged by current infestations in the fall, 1946, were quite satisfactory. There was a definite improvement, particularly in the Yosemite Valley area where infestations varied from approximately 30 to 50 percent less than in 1945. The situations at Alder Creek and Wawona Basins were also

*Annual Forestry Report for 1945, N.P.S. and Yosemite N.P. records for 1946.

improved over last year. The only exception occurred in the road screen area between Eight-mile and Chinquapin where there was an increase in current activity, but this was due partly to several lightning struck trees which were killed by bark beetles during the summer.

RECOMMENDATIONS

The highly susceptible character, particularly of the ponderosa pine and sugar pine stands of the mixed conifer timber belt between Hetch-Hetchy and Mariposa Grove, emphasizes the importance of keeping bark beetle populations as low as possible in these stands. The results of maintenance control for the past decade have provided ample proof of the value of such insurance by the sustained low endemic character of subsequent infestations.

Maintenance control is recommended again this winter and spring to suppress infestations within this timber zone. Special attention should be given to the Mariposa Grove and the Wawona Road strip, particularly in the vicinity of Eight-mile. The results of the fall survey this year indicate that there will be approximately 150 medium-sized infested trees to be treated within this zone.

The sustained character of killing in lodgepole pine in the Bridleveil Meadow area indicates a need for close watching to detect any upward trend in attacks. This area should be checked next spring during May, and if infested trees are unusually numerous, or groupings are frequent, control work should be undertaken before the end of June.